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Introducing A Greatly Superior WALNUT STOCK

Mr. Frank Leib and Leib Frostghter
3½ years old, 15 ft. high, circum-
ference of 19 inches 1 ft. above
ground. Photograph taken July 20,
1931.



Leib's FROST FIGHTER on Leib's Three-Blood Royal Root

MORE THAN thirty years ago, Mr. Frank A. Leib, upon completion of his course at Stanford University, took over the management of one of his father's walnut orchards northeast of San Jose, California. Commencing then a scientific study of walnut culture, he determined to remedy the weaknesses of the English (soft-shelled) varieties when worked on ordinary black walnut. These troubles, he felt were due largely to the lack of affinity between com-

mercial varieties and the black walnut, resulting in an insufficient sap flow, and the lack of a perfect root stock on which to graft.

His first step was to create a three-blood root. Under test this proved to be uniform and true to type with regard to the time of sap flow in Spring, maintenance of heavy



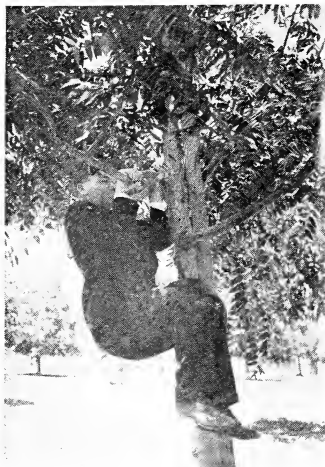
1. Leib Three-Blood Royal Root on which Frostghter is worked. This stock was $\frac{1}{3}$ to $\frac{1}{2}$ larger than California Black Walnut grown in adjoining rows.



2. Leib Frostghter 3 months from budding on one year Leib's Three-Blood Royal Root. Photographed July 20, 1931.



3. Leib's Frostfighter at end of first year's growth in nursery row. Mr. George C. Roeding, Jr., President California Nursery Co., left, Mr. Frank A. Leib, right.



4. Leib's Frostfighter two years after planting in orchard. Shows great strength of branches.



5. Leib's Frostfighter 3½ years old, 20 ft. high, circumference 17 in. 1 ft. above ground. Ready for topworking.

sap flow in mid-Summer, and very late dormancy in Fall. Mr. Leib spent more than ten years to develop the Three Blood Root. Seedlings from this root stock produced a larger, more virile root than black walnut. This variety, shown in picture No. 1, he named Leib's Three-Blood Royal Root.

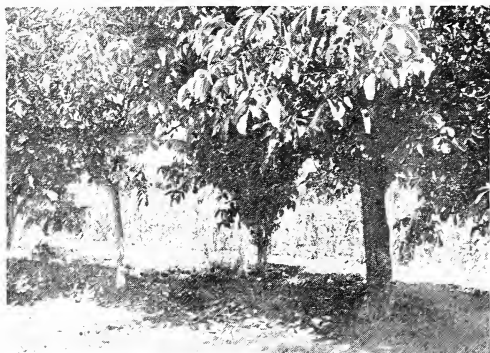
To overcome the lack of affinity between ordinary black walnut and soft-shelled commercial varieties, he next crossed the Three-Blood Royal Root with another variety to bridge the difference between types. This resulted in thousands of seedlings of varying types. After extensive tests, Mr. Leib selected one which showed marked superiorities.

This he named Leib's FROSTFIGHTER. It possessed the advantages of late Spring starting and even ripening without injury in the fall.

Because of the close relation between this hybrid and Leib's Three-Blood Royal Root, he was able to bud Frostfighter on the Royal Root with great ease. Many advantages resulted. Trunks were uniformly straight, domestic varieties were easily grafted at the *same time of the year*. Other characteristics of the "ideal" walnut stock were found to be possessed by Leib's Frostfighter when budded or grafted on Three-Blood Royal Root, namely:

1. Great vigor and rapidity of growth.
2. Strength of framework when grown.
3. An even, abundant sap flow, particularly in the hot period of the year.
4. Close affinity with commercial walnut varieties.
5. Delayed bud growth in Spring.
6. Maintenance of leaves very late in the year (—which stores an excess amount of food in the small twigs; and amply protects them from sun damage.)

Pictures No. 2, 3, 4, and 5 show the great vigor, rapidity of growth, and strong framework of Leib's Frostfighter. Mr. Leib discovered that it is important that trees be budded or grafted solely on the Three-



6. At right, L. & L. Mayette, top worked on Leib's Frostfighter and (left) Franquette low grafted in nursery. This is the average difference in a continuous row of 120 trees planted 10 ft. apart.

7. L. & L. Mayette topworked on Leib's Frostfighter. This tree is 30 ft. high, has a spread of 30 ft. and circumference of 40 inches 1 ft. above the ground. The Leib's Frostfighter is 9 years from time of planting in orchard, it was topworked 3 years after planting. The L. & L. top is 6 1/2 years old and has been producing heavy crops for several seasons. A tree like this will produce a much larger and more profitable crop than the ordinary low grafted tree.



Blood Royal Root, and topworked after 3 or 4 years orchard growth. As a test, he planted a row of 120 trees. Sixty of these were Franquette Walnut Trees, low-grafted, according to common nursery practice. Sixty were Leib's Frostfighter, on Three-Blood Royal Root. All were planted in a continuous row, 10 feet apart. The Leib's Frostfighter were topworked to L. & L. Mayette Walnuts, after 3 years. The result is shown in picture No. 6. Note the vastly superior growth.

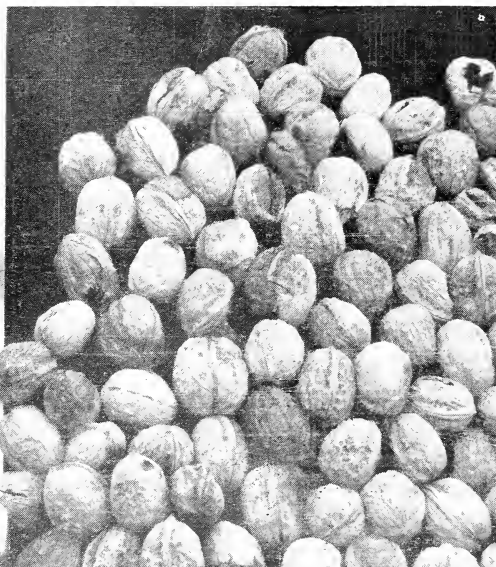
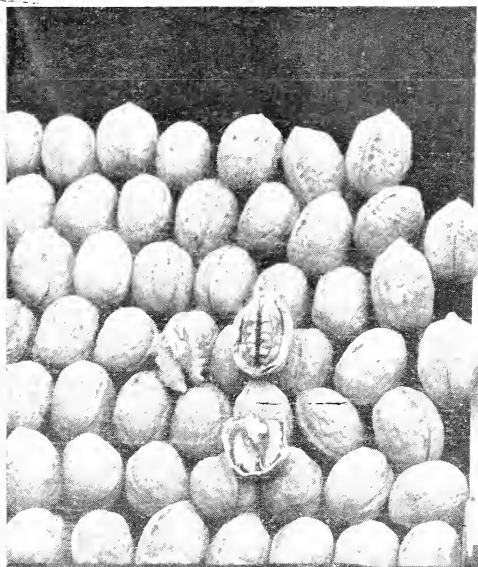
Picture No. 7 shows the results from topworking. The strength of Leib's Frostfighter has been retained in the trunk and main branches (all that part showing rough bark is Frostfighter.) The remarkable growth of the top structure proves the affinity between Frostfighter and the commercial varieties. Picture No. 8 (July, 1931) shows the luxurious leaf growth.

Picture No. 9 of the finished product is "the proof of the pudding." On July 4 and 5, 1931, temperatures of 105 and 106 were recorded in the Leib orchard. At harvest time, the walnuts from trees topworked to Leib's Frostfighter showed less than 5% of sunburn damage, while Walnuts from ordinary black walnut trees showed sunburn damage, in excess of 30%. Some of this difference was due to the more luxuriant

foliage and evenner distribution of nuts on the trees worked on Leib's Frostfighter. It was due mainly, however, to the more abundant flow of sap through the peak of the 1931 heat wave. Like an efficient automobile radiator cools the motor, so the abundant sap flow of Frostfighter (on Three-Blood Royal Root) protects the nuts and foliage of the top structure from heat damage.



8. This is another L. & L. Mayette on Leib's Frostfighter. Photograph taken July 20, 1931. This tree is 9 1/2 years from the time the Frostfighter was first planted in the orchard.



9. The finished product.

At left, Walnuts grown on Leib's Frostfighter. These nuts showed less than 5 per cent sunburn damage although temperatures of 106 were recorded in this orchard on July 4 and 5, 1931. At right, Walnuts grown on California Black in same orchard showed over 30 per cent sunburn damage. Note how the plump meats fill the entire shell.

California black walnut buds two or three weeks earlier in Spring than other walnut seedlings. Commercial varieties worked on California Black walnut pick up this trait of early growth. Leib's Frostfighter, on the other hand, includes among its parents varieties of late Spring growth and therefore is very late in budding . . . nearly as late as the Franquette. It is capable of retarding the blooming date of any variety worked on it. In seasons of late Spring frost this delay, together with the concentrated sap furnished by the Three-Blood Royal Root

will protect the crop from serious frost damage.

In line with our 67 year old policy of introducing superior, tested varieties, we have a contract with Mr. Leib for the exclusive distribution of Leib's Frostfighter and Leib's Three Blood Royal Root. *Frostfighter cannot be used with surety of success unless it is budded or grafted on Three-Blood Royal Root.* The stronger root characteristics of Three-Blood Royal Root, and its abundant sap flow make its use absolutely necessary to obtain the benefits provided by Leib's Frostfighter.

Plant Leib's Frostfighter (on Three Blood Royal Root). Get a much larger crop . . . better nuts!

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CALIFORNIA NURSERY COMPANY

GEORGE C. ROEDING, Jr., President

Established 1865

NILES, CALIFORNIA